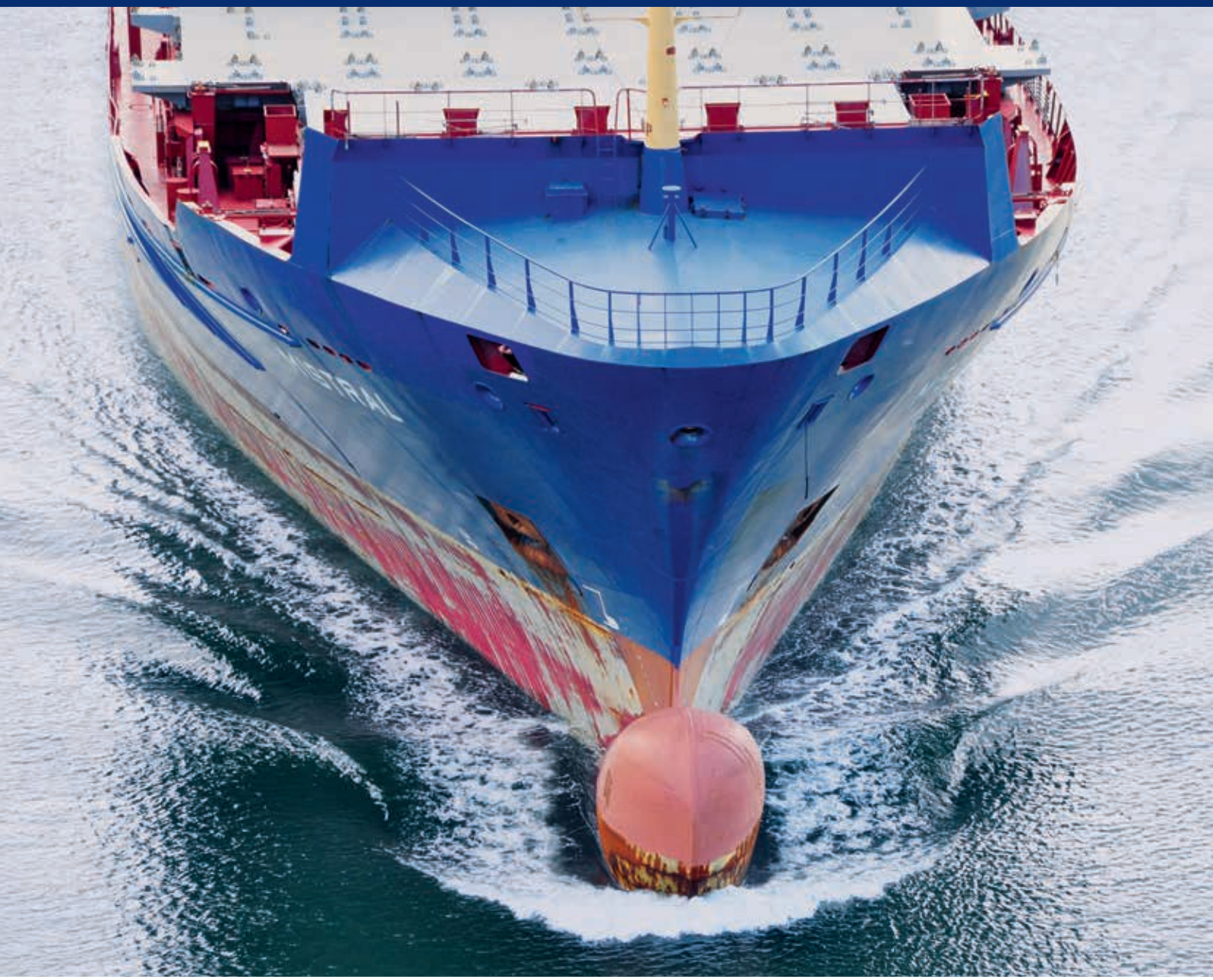
KVM solutions

Guntermann & Drunck GmbH

seit 1985

for ships, harbours & offshore



Absolute safety and robustness even under extreme conditions

Leading the way in digital KVM

Leading the way in digital KVM

Guntermann & Drunck GmbH is regarded as one of the leading manufacturers of digital and analogue KVM solutions for numerous maritime applications like control centres or equipment rooms. The separation of humans and computers on bridges or in control rooms has many advantages for standardising processes and improving the crew's working environment. When it comes to applying our KVM products in maritime environments like dredging vessels or offshore platforms, we know exactly what our customers want and are able to provide products matching these requirements.

> *Only someone who knows where he wants to sail, set the sail properly.*
>
> *Jürg Meier*

KVM solutions for:

- control stations on ships
- maritime control rooms
- monitor harbours and seaways
- offshore industries

With a broad portfolio of powerful products to extend, switch and distribute keyboard, video and mouse signals and many years of experience when it comes to installing systems on vessels and offshore platforms, G&D provides users from maritime industries with maximum customer benefits and real added value.

In its industries, G&D is considered a top performer regarding:

- Failure safety, redundancies and preventive monitoring in Air Traffic Control
- Reliable 24/7 operation especially during live broadcasts in thebroadcast industry
- Highest quality requirements regarding failure safety, long operating times and life of products for all applications in control rooms of industrial automation.

KVM Extender

Products for extending computer signals over long distances

- DL-Vision
- FIBREVision
- DVIVision
- LWLVision
- CATVision

KVM Switches

Products for operating multiple computers by one workplace

- DL-MUX
- DVIMUX-DL
- DVIMUX

KVM Matrix Switches

Products for simultaneously operating multiple computers via multiple workplaces

- ControlCenter-Digital
- DVICenter
- Dynamic-UserCenter
- CATCenter
- CompactCenter X2

KVM Add-Ons

Products for increasing productivity of various KVM pplications

- DevConCenter
- Präventives Monitoring
- SNMP trap & agent

KVM solutions for control stations on ships

On the high seas, safety is extremely important.

Both captain and crew always need to be able to rely on the technical equipment on board to maintain a clear view on location, route, speed and weather. All of these aspects demand a lot from the IT equipment.

Due to changing weather and a rough operating environment with salty air, high air humidity, waves and vibrations, IT parts must be stored in special equipment rooms.

Independent from any network

Guntermann & Drunck's user-friendly KVM extenders, switches and matrix switches extend, switch and distribute computer signals from the equipment room to the bridge. From here, the crew can access the remote computers in real time without experiencing any latencies or loss in quality.

Depending on requirements, the devices can bridge distances up to 10,000 m – without additional software and independent from the network.

The computers are stored in an access-protected central equipment room (see figure in the right)

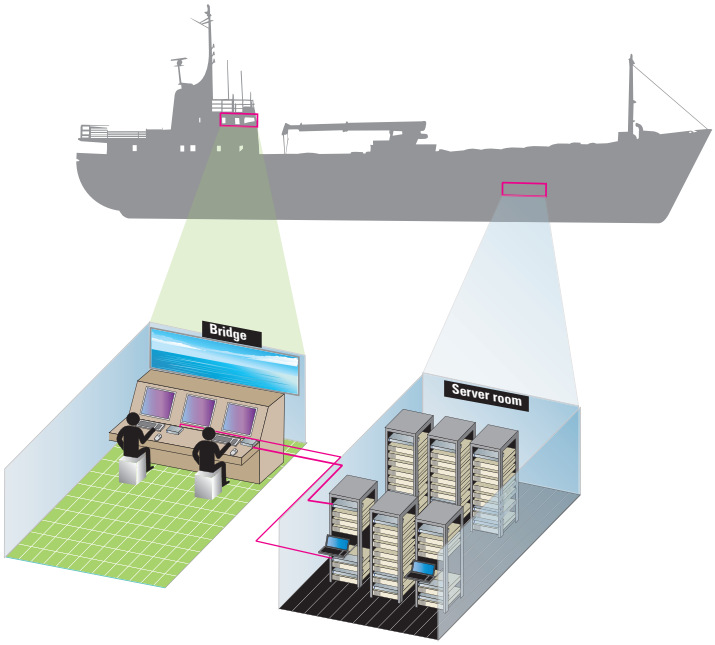
Safety | robustness | efficiency on the high seas

DVI-CPU computer modules connect the computers to the central matrix switch (DVICenter). The consoles on bridges are provided with receiver modules (DVI-CON).

Through their connection to the matrix switch, each console on the bridge has direct access to the remote computers. Now all computers can be operated from various consoles. User profiles control the access to the system.

G&D's KVM products are optimised for maritime applications. Our products undergo thorough tests. G&D devices can be used in sensitive environments, are protected against compromising emanations and can be applied in Tempest Zone I surroundings.

Using only high-quality components guarantees a long life for every product.



1 KVM Matrix Switch DVICenter
2 KVM User Station DVI-CON

G&D's devices focus on user-oriented functions

- Redundancy & fallback systems for more safety
- Screen-Freeze function keeping the last radar image available
- Push-Get function to show screen contents on other monitors or large screens
- OperatorPanel for easy switching by pressing a button
- Products as 12 V or 24 V variants

KVM solutions for maritime control rooms

High reliability as standard

On ships, various processes must be monitored 24/7. Many large and small control rooms are required to monitor drive and automation technology, video, AC and ventilation or to ensure peace and prevent conflicts. In other control rooms, processes like helicopter landings can be monitored and controlled either centrally or locally. But monitoring many processes at the same time also requires many computers.

Process control

Depending on their size, ships require extensive computer equipment to monitor multiple processes 24/7. Extremely robust and reliable KVM products fulfil any technical demands.

Endurance test for products

With G&D, you can rely on always being able to operate and access your computers. Applying IT on the high seas demands much from the equipment – G&D devices can cope with any environment. Sensitive IT equipment is separated from the actual consoles and placed in a central server room where the devices are protected from the weather and unauthorized access.

Connected to a matrix switch, computer signals are available in the control room without any delays. The board crew can access any required information from various consoles.

IEC 60945 COMPLIANT WITH

Some of G&D's products for maritime use are compliant with IEC 60945. Therefore, they are tested according to IEC 60945, a test method for navigation and radio communication equipment and systems for the use in maritime applications. G&D products comply with more standards than many other thus confirming the German manufacturer's position as a leading manufacturer of KVM products.

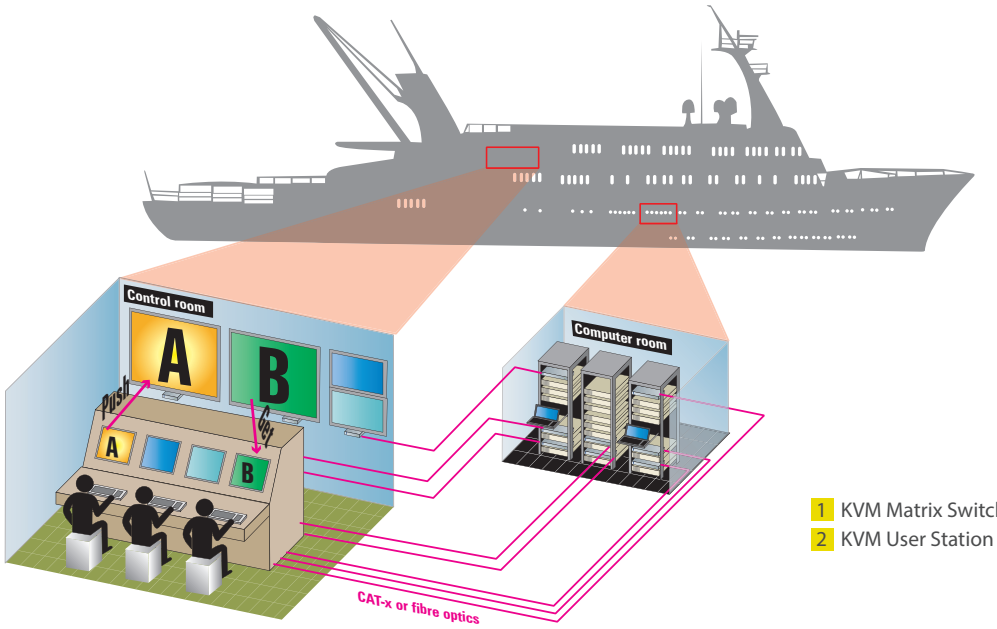
Tailored solutions

Depending on the type of video signal you want to transmit – digital (DVI) or analogue (VGA) – you can apply different KVM matrix switches. G&D also offers tailored solutions for heterogeneous IT installations that need to support both DVI and VGA.

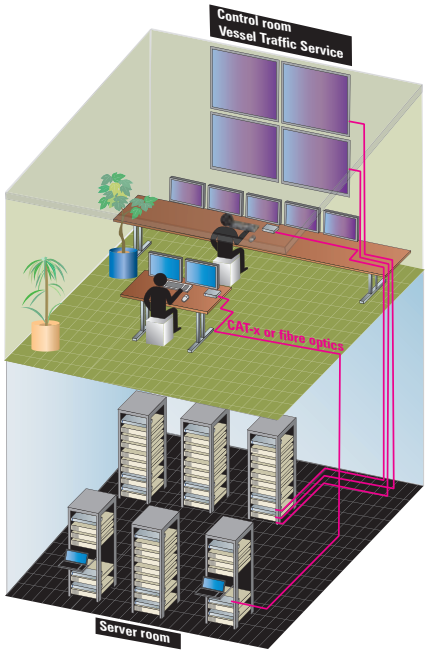
Hence existing hard- and software can be deployed further.

Push/Get-Function

The Push/Get function of matrix switches lets users move screen contents from one console to another or to large screens. And if need be, they can also get it from there to display it on their own screens. This solution does not only reduce the number of computers, but also improves the communication, flexibility and speed within the team since team member can now join forces to solve tasks.



1 KVM Matrixswitch
2 KVM User Station
3 KVM Extender, Sender
4 KVM Extender, Empfänger
5 KVM TFT keyboard drawer, RackConsole



Guntermann & Drunck GmbH

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KVM solutions to monitor harbours and seaways

Reliable products – 24/7

Offshore or onshore – we have the fitting solution. Monitoring harbours and seaways require permanent control and coordination. Therefore employees need the best ergonomic conditions supporting them in their important tasks during which they need to stay focussed and react fast.

Efficient and user-friendly

DHigh-end KVM products from Guntermann & Drunck are optimised to be applied in these environments. They can easily be called the spine of computer technology in harbours.
To make working in control rooms even more efficient and ergonomic, we recommend separating computers from operators.
If some computers are to be assigned to particular employees various KVM extender systems (see figure on the right) can be applied according to the transmitted video signal or transmission medium (optical fibres or CAT cables). Extender systems establish a direct connection to the console using existing cable structures.

Tailored solutions

Users benefit from maximum performance and usability since KVM systems enable them to work flexibly and without any distractions. We even have fitting solutions if you need to monitor multiple computers and processes at the same time. Here, KVM switches come in handy. With one switch only, users can operate up to eight computers using one keyboard and one mouse.

Depending on requirements, products transmit up to four video channels. Switching between channels takes place by pressing a button at the front of the device, hotkeys or using an external device.

Worldwide unique function

With the innovative CrossDisplay-Switching as a part of the TS function (DVICenter), users can use the mouse to easily switch between channels. The mouse acts as if on a "virtual desktop" and can be moved seamlessly across the connected displays. Moving the cursor from active to another display, the keyboard mouse focus automatically switches to the connected computer. Now users can create a multi-monitor console and need only one keyboard and one mouse to operate all computers.

Being the first manufacturer worldwide to implement monitoring and SNMP functions, our devices help you monitor

- Devices statuses of G&D products
- Device statuses of connected peripherals

Now administrators can already react to critical values (e. g. increased temperatures, errors in the communication with the keyboard interface or problems with redundant systems) before they lead to failures.

KVM solutions for offshore industries

As technological leader of high-end KVM solutions, we know about the high demands to safety and operation in the offshore industry. Hence, our KVM systems provide various features such as monitoring, SNMP or the Screen-Freeze function, which is optimised for the special requirements of offshore control rooms.

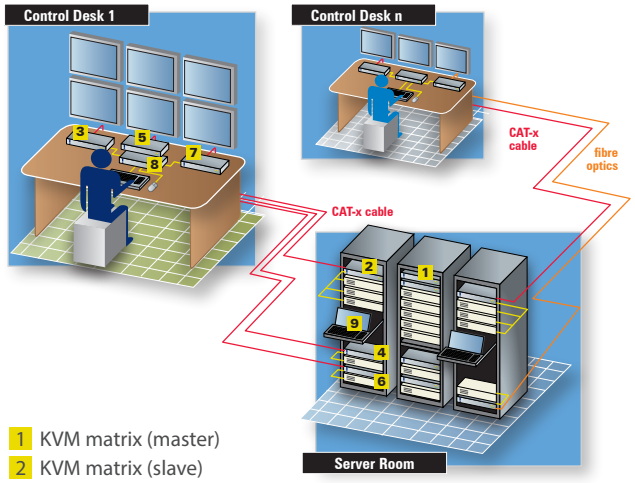
Robust and reliable

KVM products from Guntermann & Drunck are the rock in turbulent waters – extremely robust and reliable. Changing weather and the rough sea air are unable to harm the devices. By applying G&D products users have direct access to sensitive IT equipment stored safely in the server room.

To prevent failures our devices include redundant components (e.g. power packs) guaranteeing smooth operation. Using only high-quality components, we can guarantee a long life for every product.

Screen-Freeze function

If the display loses the video signal due to a broken connection or a problem with the computer's graphics card, the Screen-Freeze function „freezes" the last image displayed on the monitor. Therefore, controllers are informed about malfunctions and, for example, know where nearby ships were located before the error occurred. This state is highlighted by a red semi-transparent frame. On screen a timer informs you how long the video signal has been interrupted so far (DL-Vision). The function is automatically cancelled when the display receives an active video signal.



1 KVM matrix (master)
2 KVM matrix (slave)
3 KVM user station
4 KVM extender, VGA video, sender
5 KVM extender, VGA video, receiver
6 KVM extender, DVI video, sender
7 KVM extender, DVI video, receiver
8 KM switch, TradeSwitch
9 KVM TFT keyboard drawer, RackConsole

The following KVM extenders support the Screen-Freeze function:

- DL-Vision
- FIBREVision
- DVIVision

All common display arrangements and operating systems are supported by CDS. For your detailed options we're happy to give further advice.

KVM aboard luxury cruise liners & super yachts

Guntermann & Drunck GmbH

KVM solutions by Guntermann & Drunck are deployed across all marine sectors, wherever safety and control matter. Fitting-out luxury cruise liners and super yachts makes no exception, because KVM solutions are equally important as in any other control room or safety relevant environment. Additionally it is possible to display any kind of passenger information in real time anywhere aboard the vessel via latency free video extenders.

KVM solutions are mainly deployed in wheelhouses, engine control rooms and safety command centres as well as in production and entertainment areas.

The heart of the vessel is the wheelhouse, where the captain and his crew need to work fully concentrated in a noise free environment. All relevant information has to be made accessible at any time, unhampered by maintenance work or weather conditions.

Removing all computers into an airconditioned server room frees up space and reduces heat and noise level at the same time. Besides your computers are safely stored away and protected from unauthorised access.

IEC 60945 compliant security, Tempest and more

G&D carefully selected specific products of their portfolio to have them tested according to specification IEC 60945. Complying with this norm, G&D KVM products are now ready to be applied in engine rooms, technology rooms and even on ship bridges, IEC 60945 approved G&D KVM solutions qualify for usage alongside navigation and radio communication equipment. The specification includes numerous tests regarding the environment (heat, cold, vibration), security and electromagnetic compatibility (EMC) and meets an international standard.

If you wish to find out more about the range of IEC 60945 approved products, please, do contact the manufacturer.
Selected KVM Switches made by Guntermann & Drunck are also Tempest certified for deployment in areas where public and military safety are concerned.

Guntermann & Drunck GmbH

Leading the way in digital KVM

KVM Extender

DVI and VGA KVM Extenders enable you to operate your computers over distances up to 10,000 m whilst maintaining real-time performance. The systems consist of a transmitter and a receiver module. A local console at the transmitter module placed in the server room makes it easy for the IT staff to maintain the system. KVM extenders transmit the following computer signals:

- DVI (single-Link & dual-Link) or DisplayPort und VGA video
- Keyboard/Mouse (PS/2 & USB)
- USB 2.0 transparent
- Audio & RS232
- distances up to 10.000 m and more
- real time perfomance
- remote power swichting sequences
- for up to four video channels
- predictive maintanance via SMNP and Monitoring
- redundant power supply
- two network intefraces
- Screen-Freeze function
- transparent transmission of E-DDC information
- Ident-LED for locating device in large installations

KVM Switches

DVI and VGA KVM Switches are designed to operate 2 to 64 computers via one console consisting of keyboard, monitor and mouse.

Our DVI switches also transmit VGA video signals and so enable users to work in mixed mode. These stand-alone devices switch the following computer signals:

- single- and dual-link DVI and VGA
- keyboard/mouse PS/2 and USB
- USB 2.0 transparent
- audio
- Mixed operation of DVI/VGA on input and output side
- available as variants transmitting 1, 2, 3, or 4 video channels
- work in a user-friendly and ergonomic envirnment and have less peripherals at your desk

Leading the way in digital KVM

KVM Matrixswitches

With KVM Matrixswitches you can access multiple computers over multiple user consoles simultaneously. They consist of computer modules, central modules and user modules. G&D products allow a flexible operation of large, distributed IT installations even with multiple user consoles connected. Our KVM matrix switches transmit the following signals:

- single-link DVI and DisplayPort and VGA
- keyboard/mouse PS/2 & USB
- audio
- RS232 and transparent USB 2.0
- up to 10.000 m by fiber optics
- available as variants transmitting multi-channel video
- connecting thousands of computers over cascades
- remote access (local and over IP)
- Push-Get function to show screen contents on other monitors or large screen projections
- flexible control of large and distributed IT installations for optimised processes and control rooms
- intuitive swichting via CrossDisplay-Swichting

KVM Add-Ons

Add-on products increase productivity and efficiency of computer application.

G&D provides the following add-on products:

- TFT-RackConsoles for single-link DVI and VGA; 17“-display requires only 1 HU
- Programmable input devices for optimised device control
- Solutions for space-saving rack fasteners
- Easy switching of KVM switches by pressing a button (Operator Panel)
- Centralized, proactive monitoring and configuration of network-capable G&D devices
- Clearly arranged and space-saving installation
- Integration of customised operating concepts

KVM Extender

Operating computers from one desk via CAT or optical fibers

Get the most reliable and approved generation of KVM Extenders and make your controller working positions more efficient and flexible. G&D KVM Extender solutions enable you to access remote computers placed up to 10,000 meters away in real-time without any loss in quality and performance. Transmittable signals and designs can be combined for each product. A system always consists of a transmitter (computer side) and a receiver (user side).

DL-Vision + DL-Vision-DP

Digital dual link video via fiber optics

- range up to 10.000 m, with USB option up to 2.000 m
- resolutions up to 2560 x 1600 @ 60 Hz including 2k-resolution (2048 x 2048 @ 60 Hz)
- 4K resolution supported by DL-Vision-MC2
- for up to 4 video channels
- proactive Monitoring & SNMP
- 330 MHz pixel rate and 24 bits colour depth for cristal clear images
- redundant power supply
- with 2 network ports
- screen freeze function
- E-DDC- support
- Ident-LED for locating device in large installations

DL-Vision
The **flagship** extenders

DL-Vision (M/S) extends the signals:

· keyboard/mouse
· video (Dual-Link DVI / DisplayPort)
· audio
· RS232
· USB 2.0 transparent

4K Ultra HD

DL-Vision MC2

DL-Vision MC4

FIBREVision extends the signals:

· keyboard/mouse
· video (Single-Link DVI)
· audio
· RS232
· USB 2.0

FIBREVision

Digital single link video via fiber optics

- range up to 10.000 m, with USB option up to 2.000 m
- resolutions up to 1920 x 1200 @ 60 Hz
- for up to 4 video channels
- E-DDC support
- remote power switching
- redundant power supply
- screen freeze function
- FIBREVision is compliant with:
  - IEC 62288 and IEC 60945 (General)
  - IEC 62388 (RADAR)
  - IEC 61174 (ECDIS)

DVIVision extends the signals:

· keyboard/mouse
· video (single link DVI)
· audio
· RS232 & USB 2.0

DVI-FiberLink (S)

DVIVision

Digital single link video via CAT cable

- transmissions up to 140 m
- resolutions up to 1920 x 1200 @ 60 Hz
- for up to 4 video channels
- E-DDC support
- DVI-FiberLink to increase the system range up to 10,000 m
- remote power switching
- redundant power supply
- screen freeze function

LWLVision

Analog and digital video via fiber optics

- transmission up to 10.000 m
- resolution up to 1920 x 1200 @ 60 Hz
- DVI & VGA mixed mode
- for up to 2 video channels
- DDC support
- automatic & individual image tuning
- optional redundant power supply

LWLVision extends the signals:

· keyboard/mouse
· video (VGA and single link DVI)
· audio · RS232 · USB 2.0

CATVision extends the signals:

· keyboard/mouse
· video (VGA)
· audio · RS232 · USB 2.0

CATVision

Analog video via CAT cable

- transmissions up to 300 m
- resolutions up to 1920 x 1440 @ 75 Hz
- for up to 4 video channels
- DDC support
- automatic image tuning and delay compensation
- redundant power supply
- supports both USB and PS/2 keyboard/mouse

KVM Switches

Operation of multiple computers over one console

KVM switches let you operate multiple computers from one console consisting of keyboard, mouse and monitor. Switching is carried out via keyboard hotkeys. Computers with multi-monitor graphics cards can be connected to multi-channel switches.

DL-MUX4

for up to 4 computers via one workstation

- resolutions DVI up to 2560 x 1600 @ 60 Hz
  VGA up to 1920 x 1440 @ 75 Hz
  including 2k-resolution (2048 x 2048 @ 60 Hz)
- for up to 4 channels
- 2 network ports
- monitoring- & reporting function
- swichting via Hotkey, SNMP, buttons or external serial device
- web interface for remote configuration and displaying of the monitoring values
- supports communication with the central appliance DevCon-Center for monitoring and configuration
- Ident-LED for locating device in large installaions
- redundant power supply

DL-MUX4 switches the signals:

· keyboard/mouse
· video (dual-link DVI & VGA)
· audio
· USB 2.0

Operator Panel

· switching by pressing a button
· simplifies the operation of KVM Switches
· swichting up to 8 channels by RS232
· „Enable"-key prevents accidental swichting

DVIMUX-DL switches the signals:

· keyboard/mouse
· video (dual-link DVI & VGA)
· audio · USB 2.0 transparent

DVIMUX-DL

for up to 4 computers with up to quad video

- resolutions DVI up to 2560 x 1600 @ 60 Hz
  VGA up to 1920 x 1440 @ 75 Hz
- including 2k-resolution(2048 x 2048 @ 60 Hz)
- channel switchting via hotkey, device button or external derial device
- bidirectional audio

DVIMUX

For up to 8 computers with up to quad video

- mixed operation of analog and digital video
- channel switching via hotkey, device button or external serial device
- bidirectional audio with USB variant
- DVIMUX8 with On-Screen-Display and broadcast function (configure or control up to 8 PC´s simultaneously over one workplace)
- DVIMUX8 is certified according to:
  - IEC 62288 und IEC 60945 (General)
  - IEC 62388 (RADAR)
  - IEC 61174 (ECDIS)

DVIMUX switches the signals:

· keyboard/mouse (USB & PS/2)
· video (single-link DVI & VGA)
· audio · USB 2.0

KVM Matrixswitches

KVM matrix switches let you operate multiple computers from multiple workstations.
The basic system consists of three components: the computer module, the central module and the user module.

DVICenter system provides the signals:

· video (single-link DVI, DisplayPort, VGA)
· keyboard/mouse
· audio bidirectional
· RS232 & USB 2.0 transparent

DVICenter

Operating several computers over several simultaneous consoles

- up to 560 m range via CAT cable when cascaded
- 16, 32 or 64 dynamic ports, which can be freely configured for either user or computer connection
- resolution up to 1920 x 1200 @ 60 Hz and 1280 x 1024 @ 85 Hz
- cristal clear images
- operation and configuration via web interface and OSD
- monitoring function, SNMP support
- text-based media control over TCP/IP e.g. AMX and Crestron
- redundant power supply
- up to 10.000 m using fiber optics (DVI- Fiberlink)

ControlCenter-Digital

Modular Matrix Switch for the operation of multiple computers over several consoles

- modularity: the system can be adapted or expanded during operation
- supports CAT cable and fiber optics (even combined) system control logic on a separate controller card
- more flexibility with DynamicPort-Technology: 80, 160 or 288 dynamic ports that can be freely configured for either user or computer connection
- resolutions for a brilliant video quality: Single-Link DVI up to 1920 x 1200 @ 60 Hz
- full implementation of USB2.0 transmission/ switching
- multi monitor workstations incl. CrossDisplay-Switching
- cascadable up to 3 levels; DVICenter can be fully integrated into the system as a slave
- Monitoring & SNMP
- two network interfaces (web interface, updates, IP-switching)
- three redundant power packs that can be changed during operation
- maximum flexibility (number of ports, transmission media, supported signals and high usability)

ControlCenter-Digital provides the signals:

· keyboard/mouse (USB & PS/2)
· video (single-link DVI, DisplayPort, VGA)
· audio bidirectional
· USB 2.0 transparent
· RS232

KVM Matrixswitches

Operating multiple computers from multiple desks

KVM Matrix Switches allow users to operate several computers via several consoles as well as transmit computer signals in real-time over long distances. The basic system consists of three modular components and can be modulated to your demands.

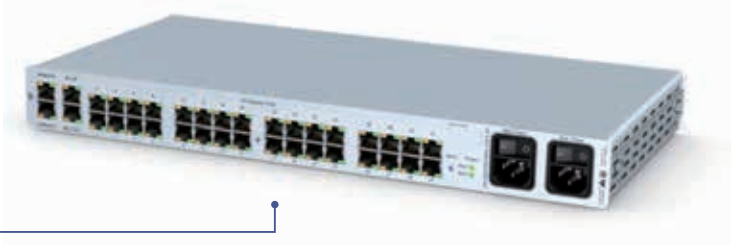
Dynamic-UserCenter32

Expanding the user range of the DVICenter system

- solution for creating large installations
- enables the access to multiple computers via several DVICenter clusters
- 32 dynamic ports, freely configurable as computer or splitting port by web interface
- Redundant power supply
- Monitoring function integrated as well as SNMP-Trap & -Agent support
- Hot-Plug and Hot-Swap system components
- configuration via web interface

Dynamic-UserCenter

· provides resolutions up to 1920 x 1200 @ 60 Hz
· offers 32 dynamic configurable ports



CATCenter NEO System extends the signals:

· VGA video
· keyboard/mouse
· audio

CATCenter NEO

Analog video via CAT cable

- transmissions up to 300 meters
- resolutions up to 1920 x 1440 @ 75 Hz
- operation and configuration via OSD, web interface and IP-client
- system range expanded by 10,000 m by using of fiber optics (NEO-FibreLink (S/M))
- offers module for computer access over IP
- monitoring function, SNMP support
- redundant power supply
- integration of DVI computers possible

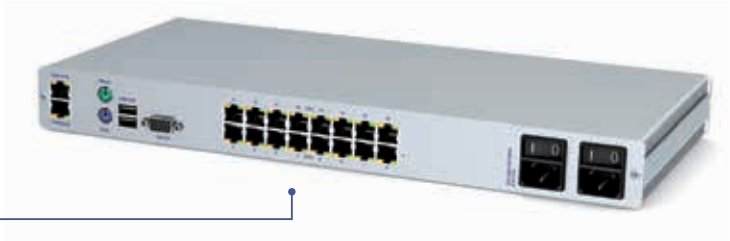
CompactCenter X2

Operating 16 computers over 2 simultaneous, integrated consoles (1 x local, 1 x IP)

- resolutions up to 1920 x 1440 @ 75 Hz
- VGA colour mode 24 bits
- transmission distance from computer module to central module: 30m
- two network ports
- configuration via web interface
- monitoring function, SNMP support
- integration of DVI computers possible

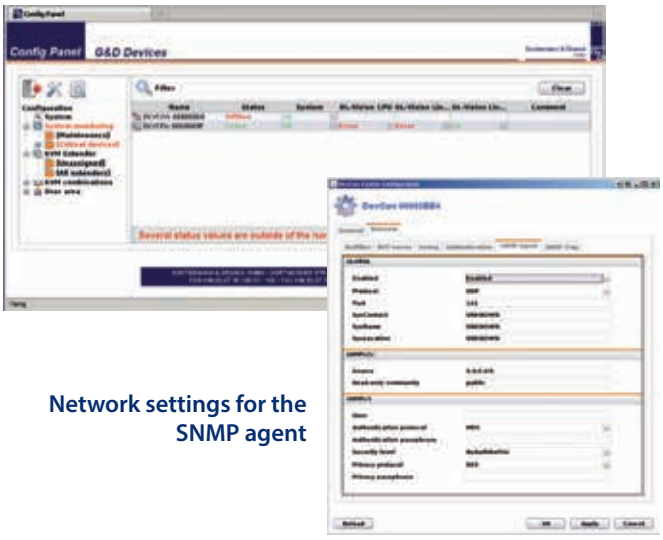
CompactCenter X2 extends the signals:

· VGA video
· keyboard/mouse



Monitoring, SNMP-Trap and -Agent are helpfull functions for predictive maintenance of the G&D devices and connected peripherals. Thanks to permanent monitoring, reporting and configuration of G&D devices administrators can react early enough to critical conditions like exceeding temperatures before they lead to failures. This is of utmost importance for redundant and fallback computer systems that are not actively used by controllers but need to be fully functional in case the main system fails.

Web interface of DL-Vision with monitoring values



Network settings for the SNMP agent

Preventive device monitoring

High operational safety and reliability are essential for G&D devices. In order to enhance these well- established attributes, our latest products are provided with two network ports which offer the following possibilities:

- device configuration
- query of system status
- dispatch these information via SNMP and as Syslog message

These settings can be carried out for each device individually via its web interface or the DevCon-Center configures and monitors the devices centrally. The DevCon-Center permanently contacts the connected devices and receives their status information.

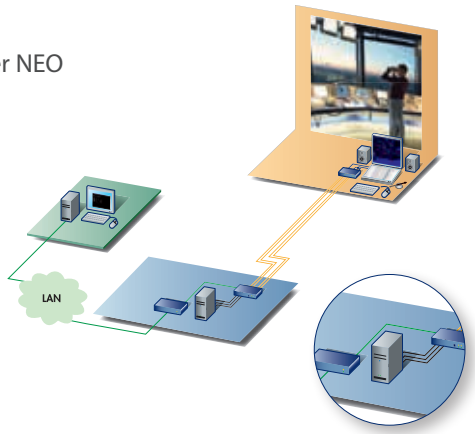
DevConCenter

- proaktive monitoring, reporting and requesting
- compatible with G&D network devices
- independent reporting or query of web interface
- supports SNMP (Trap + Agent) and Syslog
- redundant power supply
- two network ports
- critical operating conditions can be recognised in advance and the administrator can react accordingly

DevConCenter

Following products provide the monitoring function :

DL-Vision · DL-MUX
DVICenter · CATCenter NEO
CompactCenter X2
ControlCenter-Digital



SNMP trap & agent

Monitoring function for the predictive maintenance

- defined conditions and exceeded thresholds are stored in the web interface and can be viewed anytime
- SNMP-management software receives automatically any status event sent by G&D devices
- integrated SNMP-GET function enables you to query the device temperature and to provide statistics on top values as well as to recognise in advance critical status informations
- SNMP-SET has active impact on a G&D product (for example when changing channels at a KVM Switch)

KVM solutions

- KVM Extender
- KVM Switches
- KVM Matrix Switches

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